Division of Medical Assistance
Electrocardiography, Echocardiography, and Intravascular Ultrasound

Clinical Coverage Policy No.: 1R-4
Original Effective Date: January 1, 1985

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1.0 Description of the Procedure

1.1 Electrocardiography

Electrocardiography is a procedure for recording electrical changes in the heart. The electrocardiogram (ECG or EKG) shows the series of waves that relate to the electrical impulses that occur during each beat of the heart. EKGs can evaluate and detect cardiac problems.

1.1.1 Electrocardiogram

Routine with at least 12 leads

Rhythm with 1 to 3 leads

1.1.2 Cardiovascular Stress Test

Cardiovascular stress testing includes exercising on a treadmill according to a standardized protocol, with progressive increases in the speed and elevation of the treadmill, while continually monitoring the EKG, heart rate, heart rhythm, and blood pressure.

1.1.3 Microvolt T-wave Alternans

Microvolt T-wave alternans is a diagnostic test using the spectral analytic method that is medically necessary for the evaluation of persons at risk of sudden cardiac death who meet the criteria for implantable cardioverter defibrillator placement. This is accomplished by placing high-resolution electrodes, designed to reduce electrical interference, on the chest prior to a period of controlled exercise.

Note: For further information on the implantable cardioverter defibrillator, refer to Clinical Coverage Policy #11E, *Implantable Cardioverter Defibrillator,* on DMA's Web site at http://www.ncdhhs.gov/dma/mp/mpindex.htm.

1.1.4 Holter Monitor

A Holter monitor is used to evaluate the patient's ambient heart rhythm during a full daily cycle, with EKG leads on the patient's chest connected to a recorder for 24 to 48 hours. The generated report describes the overall rhythm and significant arrhythmias.

1.1.5 Cardiac (Ambulatory) Event Monitors

Event monitoring is diagnostic testing designed to capture episodic electrocardiographic data up to one month via patient demand as single- or multiple-event pre-symptom memory loops.

1.1.6 Signal-Averaged Electrocardiography

Signal-averaged electrocardiography (SAECG) is a testing technique in which multiple electric signals from the heart are averaged to remove interference and reveal small variations in the QRS complex. These late potentials may represent a predisposition towards potentially dangerous ventricular tachyarrhythmias.

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1.2 Echocardiography

Echocardiography is a diagnostic test that uses ultrasound waves to create an image of the heart. Ultrasound waves rebound or echo off the heart to show the size, shape, and movement of the heart's valves and chambers. Each component is crucial to permit a full assessment of the heart and an accurate diagnosis of certain cardiovascular diseases.

1.2.1 Transthoracic Echocardiography

Transthoracic echocardiography (TTE) uses a transducer (or probe) placed on the chest wall through which two-dimensional, color flow, and spectral Doppler images are taken of the heart.

1.2.2 Transesophageal Echocardiography

Transesophageal echocardiography (TEE) uses a transducer (or probe) introduced into the patient's esophagus through which two-dimensional, color flow, and spectral Doppler images are taken of the heart.

1.2.3 Doppler Echocardiography

Color Doppler or color flow mapping uses mean blood flow velocities to qualitatively show the flow of blood through the heart.

Spectral Doppler is used to quantitatively measure the velocity of blood flow across valves or chambers and estimate cardiac hemodynamics.

1.2.4 Intracardiac Echocardiography

Intracardiac echocardiography uses a transducer (or probe) introduced into the heart, typically via the femoral vein, during a cardiac catheterization to guide a catheter-based intervention. Two-dimensional, color flow, and spectral Doppler images are taken of the heart via this method.

1.2.5 Fetal Surveillance

For further information on fetal surveillance using Doppler echocardiography color flow velocity mapping, refer to Clinical Coverage Policy #1E-4, *Fetal Surveillance*, on DMA's Web site at http://www.ncdhhs.gov/dma/mp/mpindex.htm.

1.3 Coronary Intravascular Ultrasound

Intravascular ultrasound (IVUS) is a medical imaging methodology using a specially designed catheter with a miniaturized ultrasound probe attached to the distal end of a catheter. The proximal end of the catheter is attached to computerized ultrasound equipment. It is inserted directly into the vasculature to produce images from inside the coronary arteries.

2.0 Eligible Recipients

2.1 General Provisions

Medicaid recipients may have service restrictions due to their eligibility category that would make them ineligible for this service.

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2.2 EPSDT Special Provision: Exception to Policy Limitations for Recipients under 21 Years of Age

42 U.S.C. § 1396d(r) [1905(r) of the Social Security Act]

Early and Periodic Screening, Diagnostic, and Treatment (EPSDT) is a federal Medicaid requirement that requires the state Medicaid agency to cover services, products, or procedures for Medicaid recipients under 21 years of age **if** the service is **medically necessary health care** to correct or ameliorate a defect, physical or mental illness, or a condition [health problem] identified through a screening examination****** (includes any evaluation by a physician or other licensed clinician). This means EPSDT covers most of the medical or remedial care a child needs to improve or maintain his/her health in the best condition possible, compensate for a health problem, prevent it from worsening, or prevent the development of additional health problems. Medically necessary services will be provided in the most economic mode, as long as the treatment made available is similarly efficacious to the service requested by the recipient's physician, therapist, or other licensed practitioner; the determination process does not delay the delivery of the needed service; and the determination does not limit the recipient's right to a free choice of providers.

EPSDT does not require the state Medicaid agency to provide any service, product, or procedure

a. that is unsafe, ineffective, or experimental/investigational.
b. that is not medical in nature or not generally recognized as an accepted method of medical practice or treatment.

Service limitations on scope, amount, duration, frequency, location of service, and/or other specific criteria described in clinical coverage policies may be exceeded or may not apply as long as the provider's documentation shows that the requested service is medically necessary "to correct or ameliorate a defect, physical or mental illness, or a condition" [health problem]; that is, provider documentation shows how the service, product, or procedure will correct or improve or maintain the recipient's health in the best condition possible, compensate for a health problem, prevent it from worsening, or prevent the development of additional health problems.

****EPSDT and Prior Approval Requirements**

a. If the service, product, or procedure requires prior approval, the fact that the recipient is under 21 years of age does **NOT** eliminate the requirement for prior approval.
b. IMPORTANT ADDITIONAL INFORMATION about EPSDT and prior approval is found in the Basic Medicaid Billing Guide, sections 2 and 6, and on the EPSDT provider page. The Web addresses are specified below.

***Basic Medicaid Billing Guide*:** http://www.ncdhhs.gov/dma/medbillcaguide.htm

EPSDT provider page: http://www.ncdhhs.gov/dma/EPSDTprovider.htm

3.0 When the Procedure Is Covered

IMPORTANT NOTE: EPSDT allows a recipient less than 21 years of age to receive services in excess of the limitations or restrictions below and without meeting the specific criteria in this

section when such services are **medically necessary health care services** to correct or ameliorate a defect, physical or mental illness, or a condition [health problem]; that is, documentation shows how the service, product, or procedure will correct or improve or maintain the recipient's health in the best condition possible, compensate for a health problem, prevent it from worsening, or prevent the development of additional health problems.

EPSDT DOES NOT ELIMINATE THE REQUIREMENT FOR PRIOR APPROVAL IF PRIOR APPROVAL IS REQUIRED. For additional information about EPSDT and prior approval requirements, see **Section 2.0** of this policy.

3.1 General Criteria

Medicaid covers electrocardiograms and echocardiograms when they are medically necessary and

a. the procedure is individualized, specific, and consistent with symptoms or confirmed diagnosis of the illness or injury under treatment, and not in excess of the recipient's needs;
b. the procedure can be safely furnished, and no equally effective and more conservative or less costly treatment is available statewide; and
c. the procedure is furnished in a manner not primarily intended for the convenience of the recipient, the recipient's caretaker, or the provider.

3.2 Electrocardiography

3.2.1 Electrocardiogram

Medicaid covers electrocardiograms

a. for the evaluation of signs and symptoms related to, and disorders of, cardiac rhythm, anatomy, coronary blood flow, and myocardial function; or
b. as an adjunct in the assessment of certain drug toxicities and metabolic disorders.

3.2.2 Cardiovascular Stress Test

Medicaid covers cardiovascular stress testing

a. in the screening for coronary atherosclerosis and myocardial ischemia;
b. in the follow-up of post–myocardial infarction (MI), post–percutaneous transluminal coronary angioplasty (PTCA), or post–coronary artery bypass graft (CABG) to assess functional improvement during cardiac rehabilitation;
c. in the follow-up of patients with palliated or unpalliated congenital heart disease;
d. in the follow-up of pediatric and adult patients with dilated cardiomyopathy, regardless of etiology;
e. in the follow-up of pediatric and adult patients with hypertrophic cardiomyopathy;
f. in the pre-operative assessment of patients considered for valve replacement; or
g. in the follow-up of patients after valve replacement.

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3.2.3 Microvolt T-Wave Alternans

Medicaid covers microvolt T-wave alternans testing

a. when it is used to identify the risk of ventricular arrhythmias and sudden cardiac death; **and**
b. the patient meets the criteria for implantable cardioverter defibrillator placement; **and**
c. the spectral analytic method is used.

Note: See **Attachment A,** letter B, for a listing of allowed diagnosis codes.

3.2.4 Holter Monitor

Medicaid covers Holter monitoring when

a. the physician suspects cardiac etiology for the patient's symptoms (e.g., palpitations, dizziness, or syncope); **and**
b. the symptoms are frequent enough to expect them to be captured during the Holter monitor tracing time period.

Note: See **Attachment A,** letter B, for a listing of allowed diagnosis codes.

3.2.5 Cardiac (Ambulatory) Event Monitors

Medicaid covers event monitoring when

a. the physician suspects cardiac etiology for the patient's symptoms (e.g., palpitations, dizziness, or syncope); **and**
b. the events are so unpredictable or infrequent that a Holter monitor may not capture them, but frequent enough that event monitoring would capture; **and**
c. the symptoms are of such severity, even if infrequent, that documenting a cardiac etiology for recipient symptoms will alter clinical management; **and**
d. the patient (or parent if the patient is a child) is capable of identifying symptoms and activating the event monitor.

Note: See **Attachment A,** letter B, for a listing of allowed diagnosis codes.

3.2.6 Signal-Averaged Electrocardiography

Medicaid covers SAECG testing

a. for the management of patients with documented organic heart disease; **and**
b. in patients with a history of non-sustained ventricular tachycardia (3 or more consecutive ventricular ectopic beats occurring at a rate greater than 100 beats per minute); **and/or**
c. in patients with complex ventricular arrhythmia.

Note: See **Attachment A,** letter B, for a listing of allowed diagnosis codes.

3.3 Echocardiography

Note: The following lists are not all-inclusive.

3.3.1 Transthoracic Echocardiography

Medicaid covers TTE for

a. Assessment of cardiac chamber sizes
b. Evaluation of left ventricular hypertrophy

c. Evaluation of stenotic or insufficient valves
d. Identification of atrial or ventricular masses or thrombi
e. Identification of pericardial disorders
f. Identification and assessment of congenital heart defects
g. Guidance of percutaneous interventions directly affecting the heart

3.3.2 Transesophageal Echocardiography

Medicaid covers TEE for

a. Evaluation of bacterial endocarditis
b. Identification of left atrial pathology
c. Evaluation of mitral valvular prosthesis
d. Evaluation of the aortic arch and descending thoracic aorta for dissection, thrombi, or friable plaques
e. Evaluation of cardiac structure in critically ill patients on ventilators
f. Identification and assessment of congenital heart defects
g. Assessment of cardiac anatomy and function before and after cardiac surgery

3.3.3 Doppler or Color Doppler Echocardiography

Medicaid covers Doppler or color Doppler echocardiography for

a. Evaluation of septal defects
b. Evaluation of the severity of valve stenosis or regurgitation
c. Evaluation of site of left-to-right or right-to-left shunts
d. Assessment of diseases of the aorta
e. Evaluation of prosthetic valves
f. Assessment of congenital heart defects

3.3.4 Intracardiac Echocardiography

Medicaid covers intracardiac echocardiography for

a. Evaluation of septal defects
b. Evaluation of the severity of valve stenosis or regurgitation
c. Evaluation of site of left-to-right or right-to-left shunts
d. Assessment of diseases of the aorta
e. Evaluation of prosthetic valves
f. Assessment of congenital heart defects
g. Guidance of therapeutic catheter-based interventions

3.3.5 Fetal Surveillance

For further information on fetal surveillance using Doppler echocardiography color flow velocity mapping, refer to Clinical Coverage Policy #1E-4, *Fetal Surveillance*, on DMA's Web site at http://www.ncdhhs.gov/dma/mp/mpindex.htm.

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3.4 Coronary Intravascular Ultrasound

Medicaid covers coronary IVUS for

a. Assessment of the adequacy of deployment of coronary artery stents, including the extent of stent apposition and determination of the minimum luminal diameter within the stent
b. Determination of the mechanism of coronary artery stent restenosis and selection of appropriate therapy
c. Evaluation of coronary obstruction at a location difficult to image by angiography in a patient with a suspected flow-limiting stenosis
d. Assessment of suboptimal angiographic result following percutaneous artery interventions
e. Establishment of the presence and distribution of coronary arterial calcium in patients for whom adjunctive rotational atherectomy is contemplated
f. Determination of plaque location and circumferential distribution for guidance of directional coronary artery atherectomy
g. Determination of the extent of atherosclerosis in patients with characteristic anginal symptoms and a positive functional study with no focal stenosis or mild coronary artery disease on angiography

Note: See **Attachment A,** letter B, for listing of allowed diagnosis codes.

4.0 When the Procedure Is Not Covered

IMPORTANT NOTE: EPSDT allows a recipient less than 21 years of age to receive services in excess of the limitations or restrictions below and without meeting the specific criteria in this section when such services are **medically necessary health care services** to correct or ameliorate a defect, physical or mental illness, or a condition [health problem]; that is, documentation shows how the service, product, or procedure will correct or improve or maintain the recipient's health in the best condition possible, compensate for a health problem, prevent it from worsening, or prevent the development of additional health problems.

EPSDT DOES NOT ELIMINATE THE REQUIREMENT FOR PRIOR APPROVAL IF PRIOR APPROVAL IS REQUIRED. For additional information about EPSDT and prior approval requirements, see **Section 2.0** of this policy.

4.1 General Criteria

Electrocardiograms and echocardiograms are not covered when

a. the recipient does not meet the eligibility requirements listed in **Section 2.0;**
b. the recipient does not meet the medical necessity criteria listed in **Section 3.0;**
c. the procedure unnecessarily duplicates another provider's procedure; or
d. the procedure is experimental, investigational, or part of a clinical trial.

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4.2 Electrocardiography Exclusions

4.2.1 Microvolt T-wave Alternans

Microvolt T-wave alternans is not covered for the general assessment of a patient with atherosclerotic heart disease, congestive heart failure, or pre-surgical evaluation.

This procedure is not covered as part of a routine physical examination or as part of stress testing on a screening basis.

4.2.2 Signal-Averaged Electrocardiography

SAECG is not covered in the absence of organic heart disease and episodes of ventricular tachycardia or fibrillation.

An electrocardiogram is not covered as a separate procedure because it is included in the reimbursement for SAECG.

4.2.3 Other Procedures

Cardiovascular stress testing includes rhythm EKG, so rhythm EKG is not separately reimbursable.

Holter monitoring is not covered for less than a 24-hour monitored period.

Home-based telemetry systems are not covered by N.C. Medicaid.

4.3 Coronary Intravascular Ultrasound Exclusions

Coronary IVUS is not covered for

a. Pre-interventional assessment of lesional characteristics and vessel dimensions as a means to select an optimal revascularization device
b. Diagnosis of coronary disease after cardiac transplantation

5.0 Requirements for and Limitations on Coverage

IMPORTANT NOTE: EPSDT allows a recipient less than 21 years of age to receive services in excess of the limitations or restrictions below and without meeting the specific criteria in this section when such services are **medically necessary health care services** to correct or ameliorate a defect, physical or mental illness, or a condition [health problem]; that is, documentation shows how the service, product, or procedure will correct or improve or maintain the recipient's health in the best condition possible, compensate for a health problem, prevent it from worsening, or prevent the development of additional health problems.

EPSDT DOES NOT ELIMINATE THE REQUIREMENT FOR PRIOR APPROVAL IF PRIOR APPROVAL IS REQUIRED. For additional information about EPSDT and prior approval requirements, see **Section 2.0** of this policy.

5.1 Prior Approval

Prior approval is not required.

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5.2 Electrocardiography

5.2.1 Electrocardiogram

A maximum of four, 12-lead EKGs is allowed per day.

5.2.2 Microvolt T-Wave Alternans

Microvolt T-wave alternans is limited to once per day, regardless of whether it is performed while the patient is at rest, during stress, or in a combination thereof.

The equipment used must be FDA approved for this indication and able to detect as little as 1 microvolt of T-wave alternans.

5.2.3 Holter Monitor

The Holter monitor test is limited to one per 24-hour period.

5.2.4 Cardiac (Ambulatory) Event Monitors

a. Event monitoring is limited to once per 30 days, regardless of the number of transmissions.
b. In order to bill any of the services that include 24-hour attended monitoring, the provider must be available during the entire 24-hour period.
c. The provider of the service must be capable of receiving and recording transmissions, including receipt of the EKG signal as well as voice transmission relaying any associated symptoms.
d. The person receiving the transmission must be a technician, nurse, or physician trained in interpreting EKGs and clinical responses to abnormal EKGs.
e. The transmission is reviewed for significant symptoms or EKG abnormalities.
f. Technicians should have immediate 24-hour access to a physician to review transmitted data and make clinical decisions regarding the recipient.
g. The provider must be capable of immediately notifying the recipient with emergency instructions from the supervising or the attending physician, when appropriate.
h. The emergency instructions for the recipient, as well as when and how to contact available facilities to assist the recipient in case of emergencies, should be included by the attending physician in the referral for the monitoring.

5.3 Echocardiography

5.3.1 Transthoracic Echocardiography

TTE is limited to one per day. A repeat test is allowed only when medically necessary and the code is amended with modifier 76 or 77. A repeat test might be medically necessary if, for example, the recipient is transferred to a tertiary hospital for further specialized evaluation, the recipient has a change in clinical status, or guidance is needed during an interventional procedure.

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5.3.2 Transesophageal Echocardiography

TEE is limited to one per day for screening purposes.

Two intraoperative TEEs are allowed per day when performed during cardiac surgery as long as performed as part of the operative procedure. The pre-operative (or pre-bypass) and post-operative (or post-bypass) components must be documented. Only the first intraoperative TEE can include the code for probe placement.

5.3.3 Doppler Echocardiography

Doppler echocardiography procedures are add-on codes and must be listed separately in addition to the primary procedure. They are not to be reported as a stand-alone code and must be reported by the same physician. The primary codes are identified in the CPT Manual for each add-on code.

5.3.4 Intracardiac Echocardiography

Intracardiac echocardiography is limited to one procedure per day for guidance of a catheter-based intervention. Intracardiac echocardiography is an add-on code and must be listed separately in addition to the primary procedure. It is not to be reported as a stand-alone code and must be reported by the same physician. The primary codes are identified in the CPT Manual for each add-on code.

5.3.5 Fetal Surveillance

For further information on fetal surveillance using Doppler echocardiography color flow velocity mapping, refer to Clinical Coverage Policy #1E-4, *Fetal Surveillance*, on DMA's Web site at http://www.ncdhhs.gov/dma/mp/mpindex.htm.

5.4 Coronary Intravascular Ultrasound

Coronary IVUS includes all transducer manipulations and repositioning within the specific vessel being examined, both before and after therapeutic intervention.

IVUS is an add-on code and must be listed separately in addition to the primary procedure. It is not to be reported as a stand-alone code and must be reported by the same physician. The primary codes are identified in the CPT Manual for each add-on code.

One IVUS, initial vessel, is allowed per day. Three additional vessels are allowed per day, with the initial vessel IVUS.

6.0 Providers Eligible to Bill for the Procedure

Providers who meet Medicaid's qualifications for participation and are currently enrolled with the N.C. Medicaid program are eligible to bill for procedure when the procedure is within the scope of their practice.

7.0 Additional Requirements

There are no additional requirements.

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8.0 Policy Implementation/Revision Information

Original Effective Date: January 1, 1985

Revision Information:

Date	Section Revised	Change

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Attachment A: Claims-Related Information

Reimbursement requires compliance with all Medicaid guidelines, including obtaining appropriate referrals for recipients enrolled in the Medicaid managed care programs.

A. Claim Type

Professional (CMS-1500/837P transaction)
Institutional (UB-04/837I transaction)

B. Diagnosis Codes

Providers must bill the ICD-9-CM diagnosis codes(s) to the highest level of specificity that supports medical necessity.

93025, Microvolt T-Wave Alternans—Primary Diagnosis Allowed	
ICD-9-CM Code	**Description**
425.1	Hypertrophic obstructive cardiomyopathy
425.4	Other primary cardiomyopathies
426.82	Long QT syndrome
427.0	Paroxysmal supraventricular tachycardia
427.1	Paroxysmal ventricular tachycardia
427.2	Paroxysmal tachycardia, unspecified
427.41	Ventricular fibrillation
427.42	Ventricular flutter
427.5	Cardiac arrest
427.9	Unspecified cardiac dysrhythmia
428.0	Congestive heart failure, unspecified

93224 through 93237, Holter Monitoring—Primary Diagnosis Allowed	
ICD-9-CM Code	**Description**
250.60 through 250.63	Diabetes with neurological manifestations
306.2	Cardiovascular physiological malfunction arising from mental factors
337.1	Peripheral autonomic neuropathy in disorders classified elsewhere
410.00 through 410.92	Acute myocardial infarction
411.0 through 411.89	Other acute and subacute forms of ischemic heart disease
412	Old myocardial infarction
413.0 through 413.9	Angina pectoris
414.8	Other specified forms of chronic ischemic heart disease
414.9	Chronic ischemic heart disease, unspecified
425.1	Hypertrophic obstructive cardiomyopathy
425.4	Other primary cardiomyopathies
426.0 through 426.9	Conduction disorders
427.0 through 427.9	Cardiac dysrhythmias
435.0 through 435.9	Transient cerebral ischemia
780.2	Syncope and collapse
780.4	Dizziness and giddiness
785.0	Tachycardia, unspecified

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93224 through 93237, Holter Monitoring—Primary Diagnosis Allowed	
ICD-9-CM Code	**Description**
785.1	Palpitations
786.50 through 786.59	Chest pain
V45.00 through V45.09	Cardiac device in situ
V67.51	Following completed treatment with high-risk medications, not elsewhere classified

93268 through 93272, Ambulatory Cardiac Event Recorders—Primary Diagnosis Allowed	
ICD-9-CM Code	**Description**
410.00 through 410.92	Acute myocardial infarction
411.1	Intermediate coronary syndrome
413.0 through 413.9	Angina pectoris
414.8	Other specified forms of chronic ischemic heart disease
414.9	Chronic ischemic heart disease, unspecified
426.0 through 426.9	Conduction disorders
427.0 through 427.9	Cardiac dysrhythmias
780.2	Syncope and collapse
780.4	Dizziness and giddiness
785.0	Tachycardia, unspecified
785.1	Palpitations
786.00 through 786.59	Chest pain
V67.51	Following completed treatment with high-risk medications, not elsewhere classified

93278, Signal-Averaged Electrocardiography (SAECG)—Primary Diagnosis Allowed	
ICD-9-CM Code	**Description**
410.00 through 410.92	Acute myocardial infarction
411.0	Postmyocardial infarction syndrome
411.1	Intermediate coronary syndrome
411.81	Acute coronary occlusion without myocardial infarction
411.89	Other acute and subacute forms of ischemic heart disease
412	Old myocardial infarction
414.10	Aneurysm of heart wall
414.8	Other specified forms of chronic ischemic heart disease
427.0	Paroxysmal supraventricular tachycardia
427.1	Paroxysmal ventricular tachycardia
427.2	Paroxysmal tachycardia, unspecified
427.31	Atrial fibrillation
427.32	Atrial flutter
427.41	Ventricular fibrillation
427.42	Ventricular flutter
427.5	Cardiac arrest
427.60	Premature beats, unspecified
427.61	Supraventricular premature beats
427.69	Other premature beats

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93278, Signal-Averaged Electrocardiography (SAECG)—Primary Diagnosis Allowed	
ICD-9-CM Code	**Description**
427.81	Sinoatrial node dysfunction
427.89	Other specified cardiac dysrhythmias
427.9	Cardiac dysrhythmia, unspecified
780.2	Syncope and collapse

92978 through 92979 Coronary Intravascular Ultrasound—Primary Diagnosis Allowed	
ICD-9-CM Code	**Description**
410.00-410.92	Acute myocardial infarction
411.0	Postmyocardial infarction syndrome
411.1	Intermediate coronary syndrome
411.81	Acute coronary occlusion without myocardial infarction
411.89	Other acute and subacute forms of ischemic heart disease
412	Old myocardial infarction
413.0 through 413.9	Angina pectoris
414.00 through 414.07	Coronary atherosclerosis
414.10 through 414.19	Aneurysm and dissection of heart
414.8	Other specified forms of chronic ischemic heart disease
414.9	Chronic ischemic heart disease, unspecified
428.0 through 428.9	Heart failure
785.51	Cardiogenic shock
786.50 through 786.59	Chest pain
794.30 through 794.39	Non-specific abnormal results of function studies, cardiovascular
996.83	Complications of heart transplant
997.1	Cardiac complications
998.0	Postoperative shock

C. Procedure Code(s)

Electrocardiography Codes	
Code	**Description**
93000	Electrocardiogram, routine ECG with at least 12 leads; with interpretation and report
93005	Electrocardiogram, routine ECG with at least 12 leads; tracing only, without interpretation and report
93010	Electrocardiogram, routine ECG with at least 12 leads; interpretation and report only
93015	Cardiovascular stress test using maximal or submaximal treadmill or bicycle exercise, continuous electrocardiographic monitoring, and/or pharmacological stress; with physician supervision, with interpretation and report
93016	Cardiovascular stress test using maximal or submaximal treadmill or bicycle exercise, continuous electrocardiographic monitoring, and/or pharmacological stress; physician supervision only, without interpretation and report
93017	Cardiovascular stress test using maximal or submaximal treadmill or bicycle exercise, continuous electrocardiographic monitoring, and/or pharmacological stress; tracing only, without interpretation and report
93018	Cardiovascular stress test using maximal or submaximal treadmill or bicycle exercise, continuous electrocardiographic monitoring, and/or pharmacological stress; interpretation and report only
93025	Microvolt T-wave alternans for assessment of ventricular arrhythmias

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Electrocardiography Codes	
Code	**Description**
93040	Rhythm ECG, one to three leads; with interpretation and report
93041	Rhythm ECG, one to three leads; tracing only without interpretation and report
93042	Rhythm ECG, one to three leads; interpretation and report only
93224	Electrocardiographic monitoring for 24 hours by continuous original ECG waveform recording and storage, with visual superimposition scanning; includes recording, scanning analysis with report, physician review and interpretation
93225	Electrocardiographic monitoring for 24 hours by continuous original ECG waveform recording and storage, with visual superimposition scanning; recording (includes hook-up, recording, and disconnection)
93226	Electrocardiographic monitoring for 24 hours by continuous original ECG waveform recording and storage, with visual superimposition scanning; scanning analysis with report
93227	Electrocardiographic monitoring for 24 hours by continuous original ECG waveform recording and storage, with visual superimposition scanning; physician review and interpretation
93230	Electrocardiographic monitoring for 24 hours by continuous original ECG waveform recording and storage, without superimposition scanning utilizing a device capable of producing a full miniaturized printout; includes recording, microprocessor-based analysis with report, physician review and interpretation
93231	Electrocardiographic monitoring for 24 hours by continuous original ECG waveform recording and storage, without superimposition scanning utilizing a device capable of producing a full miniaturized printout; recording (includes hook-up, recording and disconnection)
93232	Electrocardiographic monitoring for 24 hours by continuous original ECG waveform recording and storage, without superimposition scanning utilizing a device capable of producing a full miniaturized printout; microprocessor-based analysis with report
93233	Electrocardiographic monitoring for 24 hours by continuous original ECG waveform recording and storage, without superimposition scanning utilizing a device capable of producing a full miniaturized printout; physician review and interpretation
93235	Electrocardiographic monitoring for 24 hours by continuous computerized monitoring and non-continuous recording, and real-time data analysis utilizing a device capable of producing intermittent full-sized waveform tracings, possibly patient activated; includes monitoring and real-time data analysis with report, physician review and interpretation
93236	Electrocardiographic monitoring for 24 hours by continuous computerized monitoring and non-continuous recording, and real-time data analysis utilizing a device capable of producing intermittent full-sized waveform tracings, possibly patient activated; monitoring and real-time data analysis with report
93237	Electrocardiographic monitoring for 24 hours by continuous computerized monitoring and non-continuous recording, and real-time data analysis utilizing a device capable of producing intermittent full-sized waveform tracings, possibly patient activated; physician review and interpretation
93268	Patient demand single or multiple event recording with presymptom memory loop, 24-hour attended monitoring, per 30 day period of time; includes transmission, physician review and interpretation

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Electrocardiography Codes	
Code	**Description**
93270	Patient demand single or multiple event recording with presymptom memory loop, 24-hour attended monitoring, per 30 day period of time; recording (includes hook-up, recording, and disconnection)
93271	Patient demand single or multiple event recording with presymptom memory loop, 24-hour attended monitoring, per 30 day period of time; monitoring, receipt of transmissions, and analysis
93272	Patient demand single or multiple event recording with presymptom memory loop, 24-hour attended monitoring, per 30 day period of time; physician review and interpretation only
93278	Signal-averaged electrocardiography (SAECG), with or without ECG

Echocardiography Codes	
Code	**Description**
93303	Transthoracic echocardiography for congenital cardiac anomalies; complete
93304	Transthoracic echocardiography for congenital cardiac anomalies; follow-up or limited study
93307	Echocardiography, transthoracic, real-time with image documentation (2D) with or without M-mode recording; complete
93308	Echocardiography, transthoracic, real-time with image documentation (2D) with or without M-mode recording; follow-up or limited study
93312	Echocardiography, transesophageal, real-time with image documentation (2D) (with or without M-mode recording); including probe placement, image acquisition, interpretation and report
93313	Echocardiography, transesophageal, real-time with image documentation (2D) (with or without M-mode recording); placement of transesophageal probe only
93314	Echocardiography, transesophageal, real-time with image documentation (2D) (with or without M-mode recording); image acquisition, interpretation and report only
93315	Transesophageal echocardiography for congenital cardiac anomalies; including probe placement, image acquisition, interpretation and report
93316	Transesophageal echocardiography for congenital cardiac anomalies; placement of transesophageal probe only
93317	Transesophageal echocardiography for congenital cardiac anomalies; image acquisition, interpretation and report only
93318	Echocardiography, transesophageal (TEE) for monitoring purposes, including probe placement, real time 2-dimensional image acquisition and interpretation leading to ongoing (continuous) assessment of (dynamically changing) cardiac pumping function and to therapeutic measures on an immediate time basis
93320+	Doppler echocardiography, pulsed wave and/or continuous wave with spectral display (list separately in addition to codes for echocardiographic imaging); complete
93321+	Doppler echocardiography, pulsed wave and/or continuous wave with spectral display (list separately in addition to codes for echocardiographic imaging); follow-up or limited study
93325+	Doppler echocardiography color flow velocity mapping (list separately in addition to codes for echocardiography)

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Echocardiography Codes	
Code	**Description**
93350	Echocardiography, transthoracic, real-time with image documentation (2D), with or without M-mode recording, during rest and cardiovascular stress test using treadmill, bicycle exercise and/or pharmacologically induced stress, with interpretation and report
93662+	Intracardiac echocardiography during therapeutic/diagnostic intervention, including imaging supervision and interpretation (list separately in addition to code for primary procedure)

Add-on codes are indicated with the "+" sign.

Coronary Intravascular Ultrasound Codes	
Code	**Description**
92978+	Intravascular ultrasound (coronary vessel or graft) during diagnostic evaluation and/or therapeutic intervention including imaging supervision, interpretation and report; initial vessel (List separately in addition to code for primary procedure)
92979+	Intravascular ultrasound (coronary vessel or graft) during diagnostic evaluation and/or therapeutic intervention including imaging supervision, interpretation and report; each additional vessel (List separately in addition to code for primary procedure)

Add-on codes are indicated with the "+" sign.

D. Modifiers

Providers are required to follow applicable modifier guidelines.

E. Place of Service

Inpatient
Outpatient
Physician's office
Patient's home
Intermediate care facility
Skilled nursing facility

F. Co-payments

Diagnostic testing codes are not subject to co-payment.

G. Reimbursement

Providers must bill their usual and customary charges.